Message

From: David A. Rountree [drountree@mcmillan-mcgee.com]
Sent: 6/10/2021 1:56:14 PM
To: Ohl, Matthew [ohl.matthew@epa.gov]
Subject: Re: FW: Review of the Memorandum summarizing chemical oxidation treatment of the DNAPL Cell on Third Site and comparison to bioremediation case studies and plan

Matt,

Many thanks for the follow up!

Cheers,

David A. Rountree
McMillan-McGee Corp
Direct: +1 (403) 569-5116
Mobile: +1 (403) 921-0848
Fax: +1 (403) 272-7201
4895 35B Street Southeast
Calgary, Alberta T2B 3M9
Canada

"The best way out is always through." - Robert Frost

On 2021-06-10 9:51 a.m., Ohl, Matthew wrote:

> David,
> Thank you for your call. Here is our most recent e-mail regarding previous attempts at injection-based treatments.
> Thank you,
> Matt
>
> Matthew J. Ohl
> Remedial Project Manager
> United States Environmental Protection Agency
> 77 West Jackson Boulevard, SR-6J
> Chicago, IL 60604-3590
>
> phone: 312.886.4442
> fax: 312.692.2447
> e-mail: ohl.matthew@epa.gov
>
> **From:** Ohl, Matthew
> **Sent:** Wednesday, June 2, 2021 1:59 PM
> **To:** Julie Konzuk <JKonzuk@Geosyntec.com>
> **Cc:** dave.j.becker@usace.army.mil; corey.s.knox@usace.army.mil; Andrew A Gremos <agremos@ramboll.com>; Norman Bernstein <nwbernstein@nwbllc.com>; pracher@psrb.com; Gary Wealthall <GWealthall@Geosyntec.com>; Krueger, Thomas <krueger.thomas@epa.gov>; Douglas Petroff <DPetroff@idem.IN.gov>; Clabaugh, William B CIV USARMY CELRL (USA)

<William.B.Clabaugh@usace.army.mil>
Subject: Review of the Memorandum summarizing chemical oxidation treatment of the DNAPL Cell on Third Site and comparison to bioremediation case studies and plan

Good afternoon Julie,

We have reviewed the above-referenced memorandum and understand the potential benefits of bioremediation; however, further thermal treatment still appears to be more promising than the proposed injections alone. Case studies where emulsified vegetable oil was successfully applied after treating soils with ERH and/or other thermal treatment may be helpful for further review.

If the PRPs want to propose the injections after further thermal treatment is completed, the following USACE comments are expected to be helpful.

General Comments:
A) It is agreed from the information provided that the previous ISCO was conducted in a way that failed to allow adequate contact with the contaminants. The memo does not address the potential for an inadequate mass of oxidant to have been delivered to fully address the contaminant mass present, even if delivery had been successful. This should be identified as a potential contributing factor that was not quantitatively evaluated.
B) There is very limited flow that occurs within the sheet pile barrier and this also limits the ability to distribute even persistent amendments away from the injection points. This should also be noted and considered in the approach to any future delivery of amendment within the cell.
C) The very high injection pressures (hundreds of psi) previously used for the calcium peroxide (RegenOx) undoubtedly fractured the soil. Without knowing the fracture propagation, it is not possible to know where the amendment actually went. More careful, controlled development of fractures, possibly with the placement of sand proppant and the construction of wells intersecting these fractures, would allow good distribution of amendments. This has been done for bioremediation in tight silty clays at similar sites where concentrations of TCE/DCE/VC in the 100,000s of ug/L have been successfully reduced in many nearby wells by 60-99%. This should be considered for any future attempt.
D) We recommend consideration of the use of electrokinetics to deliver soluble carbon sources to treat the tills. More information can be found in the IRTC training discussion on injection optimization presented by Suzanne O'Hara.

1. Page 4: Please note that natural biosurfactants produced by bacteria can also enhance dissolution of the NAPL.

2. Page 5: It should be noted that the overburden pressure at 10 feet is only around 8 psi, so even modest pressure can cause soil fracturing at the depths described.

3. Page 5: The text notes that carbon sources for bioremediation can persist longer than oxidants. This is true, but the 30-day lifespan for the oxidant noted in the text is not necessarily representative of the lifespan of permanganate (or even persulfate) that can persist for months in the absence of organics, allowing them to diffuse into low permeability zones and react with contaminants there.

Thank you,

Matt

Matthew J. Ohl
Remedial Project Manager
United States Environmental Protection Agency
77 West Jackson Boulevard, SR-6J
Chicago, IL 60604-3590

phone: 312.886.4442
fax: 312.692.2447
e-mail: ohl.matthew@epa.gov

From: Julie Konzuk <JKonzuk@Geosyntec.com>
Sent: Monday, April 12, 2021 8:24 PM
To: Ohl, Matthew <ohl.matthew@epa.gov>
Cc: Mark Nichter <Mark.W.Nichter@usace.army.mil>; dave.j.becker@usace.army.mil; corey.s.knox@usace.army.mil; Andrew A Gremos <agremos@ramboll.com>; Norman Bernstein <nwbernstein@nwbllc.com>; pracher@psrb.com; Gary Wealthall <GWealthall@Geosyntec.com>; Krueger, Thomas <krueger.thomas@epa.gov>; Douglas Petroff <DPetroff@idem.IN.gov>; Clabaugh, William B CIV USARMY CELRL (USA) <William.B.Clabaugh@usace.army.mil>
Subject: Memorandum summarizing chemical oxidation treatment of the DNAPL Cell on Third Site and comparison to bioremediation case studies and plan

Matt,

Please find attached a memorandum summarizing our understanding of the chemical oxidation (OXY) treatment of the DNAPL Cell, including the approach taken and the outcome of each injection phase. We have also provided some case study examples where we have implemented bioremediation in similar site conditions. We have also included some discussion regarding how our plan was developed to overcome the challenges experienced during the OXY injections. Please let us know if you have any questions or concerns.

Regards,

Julie

Julie Konzuk, Ph.D., P.Eng. (ON)
Senior Principal
Geosyntec Consultants International, Inc.
1243 Islington Avenue
Suite 1201
Toronto, ON M8X 1Y9
Phone: 416.637.8746 Mobile: 416.271.2373

GEOSYNTEC | SIREM | SAVRON

Follow Us – LinkedIn | Twitter | Facebook | YouTube